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ADP023031

TITLE: Cost of U.S. Coast Guard Regulations to the U.S. Maritime Industry and Coast Guard Initiatives to Reduce These Costs

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TITLE: Proceedings of the Ship Production Symposium, held in New Orleans, Louisiana, on 2-4 September 1992

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ADP023023 thru ADP023050

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Cost of U.S. Coast Guard Regulations to the US. Maritime Industry and Coast Guard Initiatives to Reduce These Costs

No. 3B-2

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ABSTRACT

For a number of years it has been alleged that compliance with U.S. government regulations -- specifically those of the U.S. Coast Guard -- adds so much to the cost of a new U.S.-flag vessel that U.S. shipyards are rendered noncompetitive. An often touted figure is an average 15% cost increase due to ship design and construction regulations. Case studies and owners' reports have also identified incremental costs associated with both reflaggings to U.S.-flag and the construction of U.S.-flag ships in foreign shipyards. It is the purpose of this paper to summarize past studies addressing the cost of regulatory compliance, discuss possible explanations for the variations between the conclusions of these studies, identify factors other than regulatory compliance which impact the competitiveness of the U.S. shipbuilding industry, and describe several recent Coast Guard initiatives to further reduce the already low cost of compliance with Coast Guard regulations.

INTRODUCTION

On January 28, 1992, President Bush issued a memorandum, "Reducing the Burden of Government Regulation," and in that connection called for a thorough review of both existing and proposed federal regulations. Accordingly, the Secretary of Transportation, through a notice in the February 7, 1992, Federal Register, requested public comments "on which Departmental regulations substantially impede economic growth, may no longer be necessary, or impose needless costs or red tape."

In response to the comments received, the Coast Guard undertook an

The views expressed in this paper are those of the authors and do not necessarily reflect those of the Department of Transportation or the U.S. Coast Guard.

in-depth assessment of issues related to costs imposed upon the United States maritime industries by domestic ship design and construction regulations for U.S.-flag oceangoing vessels. This assessment included consideration of whether the safety benefits associated with particular regulations warranted associated additional costs. This regulatory review focused attention on the old question of the extent to which the U.S. maritime industries are required to operate in a safety regulatory environment that adversely affects their international competitiveness.

With nearly all non-Jones Act U.S. commercial ships being built in foreign shipyards since the enactment of the Section 615 amendment (allowing U.S. flag operators receiving Operating Differential Subsidies to purchase new vessels from foreign shipyards), there has been a collapse in both commercial shipbuilding activity and the marine machinery and equipment industry in this country. U.S. shipbuilders have little choice, in many cases, but to purchase marine machinery and equipment from foreign vendors. The Shipbuilders Council of America (SCA) has recently claimed that foreign manufacturers of marine machinery charge premium prices, adding an average 15% to the material costs of a U.S.-flag ship built in a U.S. shipyard, to cover the costs -- real or perceived -- of compliance with U.S. Coast Guard design and inspection requirements for U.S.-flag ships.

The United States government is seriously concerned about the continuing erosion of both the U.S.-flag Merchant Marine fleet in foreign trade and the U.S. Active Shipbuilding Base. With the number of U.S. Navy shipbuilding contracts expected to decrease over the foreseeable future, the U.S. shipbuilding industry will likely decline further unless it can compete successfully for commercial orders in the international market. Given this economic reality and government concern, it is appropriate to reexamine the effects of Coast Guard ship design and

construction regulations on the - competitiveness of the U.S. maritime industries.

BACRGROURD

A number of studies and estimates addressing the incremental cost of construction to U.S. versus foreign shipbuilding requirements have been prepared over the past two decades. The following list contains summaries of some relevant cost comparisons.

- + The American Commission on Shipbuilding, created by Congress through the Merchant Marine Act of 1970, surveyed the U.S. shipbuilding industry in search of means to increase productivity and reduce construction costs. Its "Report of the Commission on American Shipbuilding" cites an addition of 3-5% of the cost of a U.S. flag vessel for compliance with the technical requirements of the Coast Guard, American Bureau of Shipping (ABS), and U.S. Public Health Service [1].
- In 1978 the Shipbuilders Council of America used the example of a 56,000 DWT product carrier with a cost of \$45 million as a basis for obtaining estimates from member shipyards of the cost of compliance with selected government regulations. In its "Study of Cost of Federal Government Regulations on Shipbuilding Prices", the SCA reports that U.S. government regulations "necessitate an average 14 percent (11 percent to 16 percent range), add-on to shipyard costs on a value added (labor plus overhead) basis." [2]

Of the total \$3,388,000 (approximately 7.5% of the estimated delivery cost) increase attributed to government regulations, \$2,134,000 -- or 4.5% of the completed cost of the vessel -- is attributed to the technical requirements of the Coast Guard, ABS, and U.S. Public Health Service. The remainder of the cost increase was due to ordinary industrial regulations applicable to nearly all American manufacturing and construction industries, including employee fringe benefits mandated by the Longshoreman's and Harbor

Workers' Compensation Act, the Employee Retirement Income Security Act, Federal Unemployment Insurance, and requirements of the Occupational Safety and Health Administration [3].

- 4 The SCA published a report in March of 1979 entitled "A New Direction for U.S. Maritime Policy." In addition to presenting a series of recommendations for a revised national maritime policy, the report cites the 14 percent add-on cost determined in the SCA's "Study of Cost of Federal Government Regulations on Shipbuilding Prices" discussed above and includes that study as an appendix. The SCA report adds that "...the conclusions herein stated need to be equated, in a comparative sense, with the cost of government regulations which may prevail in other shipbuilding nations of the world. No attempt has been made in this study to quantify any such differentials..." [43].
- Prior to the end of the Construction Differential Subsidy program in 1981, the U.S. Maritime Administration (MARAD) conducted cost analyses of foreign versus domestic shipbuilding to establish appropriate subsidy levels. In a 1978 analysis prepared under a contract from MARAD, a major Japanese shipbuilder estimated the additional cost of building the first of three 1530 TBU RO/RO container ships to U.S. requirements to be \$1,893,000. This amounts to 7.5% of the material cost and 4.9% of the total (\$38.5 million) cost of the vessel.

Of the \$1.893 million additional cost for application of Coast Guard requirements, approximately 28% was attributed to lifesaving equipment and accommodations materials, 23% for mechanical equipment, 41% for electrical equipment, and 8% for additional design and labor.
- A MARAD-sponsored study of the total impact of government regulation, including reporting and administrative costs in addition to higher construction costs due to more stringent engineering standards, resulted in a December 1979 report entitled "Cost Impact of U.S. Government Regulations on U.S.-Flag Ocean Carriers." The report concluded that the additional

cost directly attributable to discretionary requirements imposed by the Coast Guard -1 that is, not mandated by law or treaty -- amounted to less than one-half of one percent of vessel cost for both the 845 million tanker and the \$54 million containership considered.

- In the bidding process for its U.S.-flag C-10 Containerships, American-President Lines (APL) requested all bidding shipyards to quote on the bases of both a ship for U.S.-flag registry and a ship for Panamanian-flag registry. The cost differential between the U.S.-flag ships and "equivalent" foreign flag ships meeting classification society and international requirements, based upon initial Asian and European shipyard bids, ranged from approximately \$1.6 million to \$4.5 million per ship, the average being \$2.5 million per ship [5]. This initial bid premium of \$2.5 million was significantly reduced, however, by cooperation between the Coast Guard, APL, and the German shipyards to facilitate use of the regulatory provisions for equivalence. APL concluded that there exists a 3-5% premium associated with construction of a U.S.-flag ship in a foreign shipyard.
- In 1981, Lykes Bros. Steamship Co. purchased and reflagged two German-flag RO/RO sister ships, one built in Japan and the other built in Germany. The reflagging costs directly attributable to Coast Guard regulatory requirements amounted to \$2.8 million for the former ship and \$4.5 million for the latter [6].
- Also in 1981, the wrecked vessel SEATIGER, a tanker built in Japan in 1974 for Liberian registry, was rebuilt and simultaneously converted to meet U.S. standards for reflagging as the OVERSEAS BOSTON. A MARAB/General Dynamics shipyard study of this reflagging, based upon estimates rather than documented shipyard costs, concluded that design and construction requirements for U.S.-flag registry would increase the cost of a comparable new vessel by approximately \$1.8 million. Eliminating the \$47,000 worth of habitability upgrades attributable to union requirements yields a cost increase directly attributable to Coast Guard regulations of roughly \$1.76 million [7].

American Automar Inc. reflagged the AMERICAN EAGLE, a RO/RO built in Sweden in 1981; in the summer of 1983. The owner estimated the cost of compliance with Coast Guard regulations to be \$1.4 million [8]. This figure corresponds to about 4.2% of the total purchase and conversion cost for this vessel.

In the spring of 1989, a survey team of MARAB officials visited several Japanese shipyards. The yards have been requested, in advance, to identify the additional costs, if any, associated with compliance with Coast Guard regulations. One yard reported a 2% increase in delivery (total) cost, due to delays in the construction schedule to obtain necessary approvals, delays to make needed modifications to U.S.-SUDDIED materials and equipment, ... restricted sources of supply for components, and "personality" (presumably cultural) difficulties in dealing with the Coast Guard.

Another shipbuilder reported an increase in material cost of 12 or 13 percent. With the material cost of Japanese-built container ships accounting for about 70% of the delivery cost, this cost of compliance equates to roughly 9% of the total vessel cost.

A third Japanese shipyard reported a resultant 10 to 12% increase in material cost, corresponding to 7 to 8.4% of the total vessel cost.

DISCUSSION OF THESE COST ANALYSES

Government regulation is but one factor which should be considered when comparing construction costs in foreign shipyards with those in U.S. shipyards. Employee wages and indirect compensation, foreign government subsidies to shipbuilders, and construction time required to complete a ship are among many other factors which may affect the delivery cost of a vessel. It is difficult to either confirm or refute the validity of any of the incremental cost figures presented above.

The two SCA studies discussed above compared U.S. flag vessels to "standard" foreign flag vessels of the same size and service before the entry into force of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74) and its 1981 and 1983 Amendments. Similarly, all of the reflagged vessels discussed above were built prior to the implementation of the 1981 and 1983

SOLAS Amendments. Foreign and domestic technical requirements were not comparable at the time of these particular studies: SOLAS 74, as amended, has minimized the difference between the engineering design requirements in force worldwide and those in Coast Guard regulations. The structural fire protection requirements in the 1981 amendments are essentially equivalent to the Coast Guard requirements for cargo ships. The 1983 amendments eliminated most of the significant differences between foreign-flag and U.S. requirements for lifesaving systems. The fact that the SOLAS Amendments moved international requirements closer to those of the Coast Guard only confirms the validity of the Coast Guard regulations in these areas. This narrowing of the differences between various national ship safety standards would effectively eliminate or substantially reduce many of the incremental regulatory costs for newly built ships.

With more nearly equal technical requirements in effect as a result of amendments to SOLAS, the cost differential between construction to U.S. versus foreign regulations will naturally be diminished. As an example, had the 1981 reflagging for Lykes Bros. of the two sister RO/ROs discussed above been performed on ships complying with the 1981 and 1983 amendments to SOLAS, the Coast Guard estimates the reflagging costs would have been reduced from \$4.5 to \$2.1 million for one ship and from \$2.8 million to \$1.8 million for the other, or about half of what they actually were. More recent amendments to SOLAS would have eliminated the need for replacement of the low-pressure CO₂ extinguishing systems, reducing these reflagging costs nearly by half again.

Considering again the Lykes Bros. reflaggings discussed above, it is interesting to note that the ship built in Germany cost approximately 60% more to reflag to U.S. standards than its "sister ship" built in Japan. This considerable difference in the reflagging costs for two supposedly similar ships, built to the same specifications in the same year and classed by the same society, suggests that there exist significant differences in both the application of requirements among various shipbuilding nations, and the national industrial standards affecting the quality of materials and components locally available for shipyard use. Shipyard compliance with, and flag administration enforcement of requirements is also problematical: combustible insulation material installed on the German-built ship did not conform to the construction specifications.

The SCA studies treated the cost of compliance with ABS rules as an "add-on" cost, in addition to the costs of compliance with Coast Guard and Public Health Service regulations. In practice, all commercial ships in 1 foreign trade must be "classed" by a reputable classification society in order to obtain insurance, and few significant differences exist between the technical requirements of the leading classification societies. Eliminating this common cost of compliance with classification society rules reduces the magnitude of the cost differential cited in the SCA studies.

In enacting major maritime safety legislation exceeding (or preceding) the implementation of comparable international standards, the U.S. Congress has demonstrated its belief that certain safety benefits outweigh the associated costs. Examples include the upgraded tanker steering requirements of the Port and Tanker Safety Act of 1978 and the double hull tankship requirements of the Oil Pollution Act of 1990.

The cost differential may be presented in dollar amounts, percentages of ship cost, or both. Because the percentage figures may be based on the price the purchaser pays the shipyard for the ship -- not the total ship cost, which may include sizable foreign government subsidies -- the dollar amounts may often be analyzed with greater confidence.

U.S. shipbuilding has operated as an essentially unsubsidized industry for the past decade. While U.S. Navy shipbuilding contracts and such incentives for U.S. construction as the Jones Act and Operating Differential Subsidies may be viewed as indirect subsidization, the payment of direct commercial shipbuilding subsidies ended in 1981 with the cancellation of the Construction Differential Subsidy program. The governments of other shipbuilding nations -- in particular Japan, South Korea and Germany -- continue to heavily subsidize their shipbuilding industries. According to MARAD, direct subsidies from the German federal and state governments to the HDW shipyard for the construction of the C-10 containerships for American President Lines exceeded 25% of the construction costs.

U.S. SHIPBUILDING COMPETITIVENESS

A number of studies have concluded that the productivity of U.S. shipyards, measured in terms of labor hours required to construct comparable commercial ships, was (at the time of the studies) significantly lower than that of many Japanese and European shipyards. A study by A. P. Appledore

ztd. concluded that, for the period 1976 to 1979. "productivity in the best Japanese and Scandinavian yards is of the order of 100 percent better than in good U.S. shipyards" [9]. A cost accounting system study by Livingston Shipbuilding Company revealed that the actual labor hours required by Ishikawajima-Harima Heavy Industries (IHI) to construct the first ship in a series of bulk carriers was less than 30 percent of the labor hours required by Livingston to build the first ship -- a modified IHI design -- in its series C101 - Similarly, -a cost estimate prepared by a major U.S. tanker owner stated that the actual labor hours required to build comparable ships were 46 percent of U.S. requirements in Japan and 57 percent in Europe [11].

While it is generally acknowledged that many U.S. shipbuilders have improved their productivity since the studies discussed above were conducted, construction times in U.S. yards continue to exceed those of the better foreign yards. MARAB officials estimate an average time from the start of fabrication to delivery of 18-24 months for U.S. shipyards and 9-12 months for leading Japanese and European yards. With 1990 U.S. shipbuilding hourly employee compensation costs (including fringes) less than those of most Northern European shipbuilding nations and about equal to those of Japan [12, 133, crucial cost factors such as construction time must be improved to increase the competitiveness of the U.S. shipbuilding industry.

In its recent report on the economic effects of enactment of H-R. 2056, The Shipbuilding Trade Reform Act of 1992 (or "Gibbons Bill"), the U.S. International Trade Commission estimated the average cost difference between U.S. and foreign-built ships based upon bids for construction contracts for similar ships from 1989 to 1991. The Commission found that bid prices for commercial ships made by U.S. shipyards were, on average, 97 percent higher than comparable bids by foreign yards [14]. The Commission attributed this price differential to the lack of recent U.S. experience in commercial shipbuilding and overspecialization of U.S. labor, as well as foreign government subsidies.

The government regulations specifically applicable to the ship itself -- such as Coast Guard regulations and the standards incorporated by reference therein -- are as applicable to foreign shipbuilders constructing ships for U.S. owners as they are to U.S. shipbuilders. "Premium" costs added by foreign shipyards building U.S.-flag vessels to comply with Coast Guard regulations have often been based upon a misunderstanding of the regulations -- particularly the

"equivalence" provisions which allow the use of foreign materials, equipment and arrangements demonstrated to be equivalent to those contained in Coast Guard regulations. Through a cooperative effort between the German shipbuilders, American President Lines, APL's marine consultant and the Coast Guard, the "premium" costs for APL's C-10 containerhips were identified and essentially eliminated [151]. Similarly, a comparison of the costs associated with the reflagging of several foreign vessels (i.e., Lykes Bros.' M/V CYGNUS and M/V LYRA, and American Automar's M/V AMERICAN EAGLE) reveals that the seeking of equivalencies results in lower conversion costs [163].

Coast Guard regulations are not applicable to foreign flag ships even if built in U.S. yards. Were U.S. shipyards truly competitive in the global marketplace with the exception of the "burden" of compliance with Coast Guard regulations, one would expect U.S. shipyards to be active in building vessels for foreign owners. With the exception of a few fishing boats being built for foreign owners by small U.S. yards, there is no foreignflag commercial shipbuilding in the United States, nor has there been for nearly 30 years. The absence of foreign flag shipbuilding in the U.S. must be attributed to factors such as the long delivery schedules and corresponding high delivery costs at U.S. yards, not any "added" cost of compliance with Coast Guard regulations.

The U.S. shipbuilding industry has bemoaned the lack of opportunities for series construction. The July 1991 SCA "Ship Construction Report, 1989-1990 in Review" states, "The primary reasons for remaining cost disparities between the U.S. and foreign yards are (1) foreign shipbuilding subsidies, and (2) the fact that U.S. builders quote prices for first-of-class and short-run programs rather than series builds." While the 1973 Report of the Commission on American Shipbuilding viewed the construction of standard ships in series as the most important factor in productivity, more recent studies have concluded that increased productivity is the key to improved competitiveness and that series production is not crucial to implementing substantial productivity improvements [173].

Faced with competition from subsidized foreign competitors in the commercial shipbuilding marketplace and the naval construction opportunities resulting from the Reagan administration's planned 600-ship Navy, the larger U.S. shipyards have relied almost exclusively on naval shipbuilding contracts for the past decade. [002909] How the government's Shipbuilding and Conversion, Navy (SCN) budget is in

decline, and the Navy's shipbuilding plan for fiscal years 1992-1997 projects a sustained low level of new construction. Several U.S. yards have recognized the impending shortage of naval orders and are attempting to reenter the commercial shipbuilding market. These yards have arguably lost their expertise in commercial Ship design and construction (including a familiarity with Coast Guard classification society and S&AS requirements) and are hampered by large accounting, inspection and combat systems staffs which, while required for Navy contracts, constitute wasteful administrative overhead for shipyards competing for commercial contracts.

At the same time, certain experience gained and productivity improvements made through naval construction projects may be transferred to commercial shipbuilding. For example, military specification welding procedures and performance qualifications might be accepted as equivalent to those, based upon the American Society of Mechanical Engineers (ASME) Code, now required by Coast Guard regulations. This acceptance would eliminate the need for U.S. shipyards attempting the transition from naval to commercial shipbuilding to requalify and possibly retrain competent welders simply to comply with Coast Guard regulations.

CURRENT INITIATIVES

There is no doubt that the availability and cost of quality marine materials and equipment has significant potential for affecting the competitiveness of U.S. shipbuilders. Unfortunately, the decline in U.S. commercial shipbuilding has led to an erosion of the domestic supply base for marine machinery and materials. Shipbuilders must turn to foreign sources of supply for many critical components. The U.S. shipbuilding industry maintains that foreign suppliers of marine machinery and equipment charge "premium" prices to cover the cost -- real or perceived -- of compliance with Coast Guard ship design and construction requirements. In a May 21, 1991 letter to the then Chief of the Coast Guard's Office of Marine Safety, Security and Environmental Protection, the president of the SCA stated, "Shipyards can always find extreme cases where the price for equipment, which is well-proven technically and used for years in foreign-flag ships, is increased as much as 65% when U.S. Coast Guard rules are applied. The more normal price premium situation adds an average of 15% to the material costs of a U.S.-built U.S.-flag ship."

The U.S. government has long been 1 sensitive to industry claims of excessive regulation. An interdepartmental Maritime Regulatory Review Study Group examining this issue in 1982 found that significant progress had already been made in offering regulatory relief without compromising safety C181. Since that time, the Coast Guard has repeatedly reexamined its regulations to determine where classification society rules, SOLAS requirements and industry consensus standards could be used in place of Coast Guard regulations for maximum efficiency to the industry. Notable, ongoing Coast Guard efforts to relieve the regulatory burden on the maritime industries are described below.

Relief Within 3 weeks

Through pro-active participation in the International Maritime Organization (IMO), the Coast Guard systematically broadens the scope and increases the specificity of requirements in the SOLAS Convention and other IMO instruments. Among the notable accomplishments are mandatory damage stability requirements for dry cargo vessels, development of recommended intact stability standard for all ships, requirements for automatic sprinkler systems on all passenger ships, and development of guidelines for emergency training and crew drills. Once the desired results are achieved internationally, the Coast Guard has typically accepts or adopts the international requirements and eliminates corresponding domestic regulations.

The Coast Guard incorporates numerous industry consensus standards and performance-based requirements in lieu of detailed design requirements into new regulations and revisions of existing regulations. Since 1968, the Coast Guard's Marine Safety Program has adopted over 250 industry consensus standards into its regulations. This practice has substantially lessened the regulatory burden on the U.S. maritime industries and eliminated many pages of federal regulations while maintaining the desired level of safety. The advantages of doing this are threefold: first, it makes use of recognized standards which are familiar to the industry so that redesign and special retooling are unnecessary; second, it reduces the time necessary to obtain approvals and reduces the cost premium associated with "Coast Guard approved" equipment; and third, it ensures that the regulations are current with the latest technology. The adoption of international industry standards (e.g., those of the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC)) also allows American industries to be more competitive in the

world market. The National Shipbuilding Research Program (NSRP), with the full concurrence of senior shipbuilding, ship operating, and government officials, has recognized that a body of national shipbuilding standards is essential for the U.S. maritime industries to be competitive. The Coast Guard continues to work with national standards writing organizations such as the Society of Naval Architects and Marine Engineers standards development panel and the American Society for Testing and Materials shipbuilding committee to develop consensus standards in order to replace detailed federal regulations.

The Coast Guard incorporates by reference into the Code of Federal Regulations many of the American Bureau of Shipping Rules for ship design and construction. In 1982, the Coast Guard entered into a Memorandum of Understanding with ABS through which ABS is authorized to conduct certain aspects of design review and inspection of new vessels on the Coast Guard's behalf. This MOU and its implementing Navigation and Vessel Inspection Circular No. 10-82 have been favorably received by the maritime industries and have worked well to reduce the duplication of effort and ease the administrative burdens such duplication imposes on industry.

"Levelina The Playino Field" Via Compliance and Enforcement

The Coast Guard has taken other steps to "level the playing field" on which U.S.-flag ships compete with foreign shipping. The actions described below are intended to improve both safety and the competitive posture of the U.S. maritime industries by preventing the operation of unsafe ships in U.S. waters.

Exercising its authority under U.S. law and the SOLAS Convention, the Coast Guard conducts control examinations of foreign flag ships calling at U.S. ports to verify compliance with the terms of their international safety certificates. The program currently places the greatest emphasis on passenger ships and tankers and focuses on fire safety, crew training, and emergency drills. This program continues to reveal numerous cases of noncompliance with international and domestic requirements. When safety discrepancies are found, the Coast Guard frequently withholds sailino clearance and, on occasion, intervenes to withdraw a vessel's Safety Certificate until all safety aspects of a vessel are found satisfactory.

In 1991, the Coast Guard hosted two International Marine Safety Workshops to develop strategies for the improvement of marine safety worldwide. The participants, top executives representing flag Administrations,

classification societies, ship owners, and hull insurers, developed numerous recommendations for policies and actions that will reduce substandard flag State and classification society performance, promote a high level of compliance with international safety standards, and improve the uniformity of enforcement by flag Administrations, individual classification societies, and the International Association of Classification Societies. These workshops enabled the Coast Guard to build the broad support needed to effect sweeping new safety initiatives through IMO, for example, the passenger ship fire safety upgrade requirements approved at the sixtieth session of IMO's Maritime Safety Committee (MSC 60).

Earlier this year, the United States and several other nations jointly submitted to MSC 60 three papers presenting recommendations, stemming from the Marine Safety Workshops mentioned earlier, for curbing the operation of substandard ships and establishing criteria for responsible flag States and classification societies. One paper proposed the creation of a worldwide data system to record and share information on serious safety deficiencies and to help to identify substandard vessels. Another proposed the development of standards for flag States and identified elements such as the number, experience and technical qualifications of personnel, facilities and infrastructure, and oversight programs as essential for an effective flag State control program. The third paper, noting that a number of the more than 40 classification societies now in existence do not appear to have the technical expertise or infrastructure to perform traditional classification society work, proposed amending SOLAS to require ships to meet structural standards established by a classification society recognized by IMO.

Acceptance of Alternative Standards

One ongoing project which the Coast Guard believes holds great promise for increasing the availability and decreasing the cost of acceptable marine materials and equipment is a joint industry-government project with the SCA and the NSRP to evaluate for acceptance, and publish in the public domain, alternative standards for marine materials and equipment. The SCA has concluded that much of the "premium" price charged by suppliers is added to cover perceived rather than actual additional costs required to comply with Coast Guard regulations. The Coast Guard agrees. It is the Coast Guard's view that, with a small number of exceptions, there should be little or no premium cost associated with compliance

with Coast Guard regulations. The regulations have long contained equivalency provisions which clearly permit the use of foreign materials, equipment and arrangements demonstrated to be equivalent to the materials, equipment and arrangements cited in regulation. The primary method for determining this equivalence is a comparison of the foreign or international standards to which the equipment is made to comparable standards in Coast Guard regulations. Many shipbuilders and shipowners have used these equivalency provisions to take advantage of the greater availability and cost savings associated with the purchase of foreign equipment.

The problem with this approach is that each submittal to demonstrate equivalence has been regarded as proprietary: the Coast Guard cannot share the determination of equivalence with other parties, and shipyards and consultants have guarded the results of their efforts jealously. This has led to the wheel being reinvented -- and time and money expended by both the shipbuilding industry and Coast Guard -- to duplicate previous reviews for equivalence. An additional problem, in the Coast Guard's view, is the fact that U.S. shipbuilders, out of lack of understanding of Coast Guard regulations and an innate conservatism, impose upon equipment vendors a requirement that does not exist -- that all materials and equipment be "Coast Guard approved."

To remedy this situation, the SCA proposed and the Coast Guard agreed to a cost-shared joint project to identify and remove unnecessary restrictions in the shipbuilding regulations, especially as they affect acceptance of ships' machinery and materials. The long-term goal of this effort is to reduce the time and money expended by both the Coast Guard and the U.S. shipbuilding industry to obtain approvals for alternative materials and equipment for U.S.-flag ships. A two-phase program was envisioned.

Phase I of this project, completed in December 1991, examined the process for obtaining Coast Guard acceptance of alternative design, material and component standards via the equivalency process, and documented the Coast Guard and SODAS requirements pertaining to acceptance of materials and equipment. To provide a means of working cooperatively with the Coast Guard without violating conflict of interest guidelines, the SCA reestablished its support of the marine industry training program by providing training positions at shipyards. The Coast Guard dedicated an experienced marine inspector to this project during a six-month industry training assignment.

During Phase II, recommendations for streamlining the acceptance process as well as specific standards for ship systems and their associated materials and equipment will be evaluated for acceptability. This will involve an industry-led effort to perform detailed engineering comparisons of selected foreign and international standards to U.S. standards to determine acceptability. The principle product of this project will be the public dissemination of these determinations of acceptability. As a result, the necessary engineering analysis, testing, documentation, and evaluation need be done only once, not each time a shipbuilder desires acceptance of a particular standard.

Earlier this year, the SCA proposed this project to the NSRP for sponsorship. The NSRP Executive Control Board accepted the project and authorized \$215,000 in fiscal year 1993 funding to proceed with Phase II. The Coast Guard recognizes the NSRP's established mechanism for publication of material related to ship production, and fully supports the use of the NSBP for project sponsorship. Both MARAD and the Coast Guard are represented in the NSRP and both will work with industry through this project.

CONCLUSION

While the percentage and dollar amount figures vary widely, it appears that some small incremental cost of compliance with Coast Guard regulations exists. It should be apparent, however, that regulation is clearly not responsible for the current high cost differential between U.S. and foreign shipyard construction costs. It may be unrealistic to expect the incremental cost to be completely eliminated, due to legislatively-mandated requirements, differing interpretations of good marine practice, and the lack of unanimity among other maritime nations in the application of requirements -- even those implementing agreed-upon international conventions. The Coast Guard is sensitive to this incremental cost and its effects on the economic health and international competitiveness of the U.S. shipbuilding industry and the U.S. Merchant Marine fleet.

Coast Guard policies, both past and present, have been effective in reducing the regulatory burden and improving the competitive posture of the U.S. maritime industries. These policies will be continued and supplemented with new initiatives to accelerate the achievement of Coast Guard goals to reduce the regulatory burden and effect even greater cost savings for the U.S. maritime industries. The Coast Guard is committed to reducing even further the incremental cost of construction of

U.S.-flag ships. As always, the Coast Guard stands ready to work with U.S. shipbuilders and ship operators to overcome the inefficiencies of the past and aim toward global competitiveness.

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